

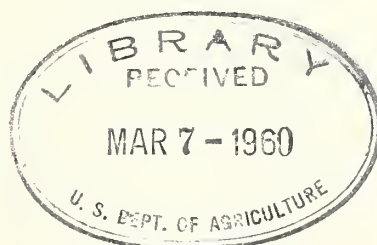
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NATIONAL PLANT MATERIALS WORKSHOP  
Asheville, N. C. - Beltsville, Md.  
October 23-30, 1958





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AGENDA

ASHEVILLE, N. C.

THURSDAY, Oct. 23

9:00 A. M.	Welcome	E. B. Garrett
	The Second Workshop	A. D. Stoesz
	Remarks	J. C. Dykes
	Remarks	E. H. Graham

10:00-12:00 A. M.     A 10-to 15-minute report followed by 5 to 10 minutes of discussion from each Group of States on major accomplishments in Plant Materials work during the past year.

1:30-3:00 P. M.     On the basis of the Service's experience in testing plants at PMCs and in Field Plantings, what are the benefits of establishing an intermediate step (field evaluation plantings) as an aid in evaluating plant materials?

Don Douglas, Chairman  
Joe Ruffner  
W. C. Young

3:30-5:00 P. M.     The need for plant materials in the Great Plains Program and how this need can be met by the SCS.

- a. To assure adequate seed supplies of the right materials on schedule.
- b. To improve the technical aspects of the vegetative program.

M. D. Atkins, Chairman  
Jesse McWilliams  
Joe Downs

FRIDAY, Oct. 24

8:30-10:00 A. M.     Functions of the Plant Materials Technicians and their relationship to other specialists and Soil Conservationists on State Program staffs.

- a. While plants are in the evaluation stage - at Plant Materials Centers and in field plantings.

- b. When plants are ready for field use - application to farm and ranch planning.

A. L. Hafenrichter, Chairman  
Verne Davison  
Cal Roark  
Virgil Hawk

10:30-12:00 A. M.      Relations with Experiment Stations and other State and Federal agencies:

- a. Assisting line officers with relations problems in Plant Materials.
- b. Keeping abreast of techniques related to Plant Materials.
- c. Representing the problems and needs of the SCS for new and improved Plant Materials to other agencies.

W. W. Steiner, Chairman  
Kenneth Welton  
Jesse McWilliams  
W. A. Hill  
Jim Case

1:30-3:00 P. M.      Evaluating the operations of Plant Materials Centers - the direct versus the indirect method of management.

- a. Southeast - Americus Plant Materials Center - through cooperative agreement.
- b. Great Plains - Los Lunas PMC - through co-operative agreement with Service liaison.
- c. West - Aberdeen PMC - Service managed.

W. C. Young, Chairman  
Joe Downs  
Don Douglas  
T. C. Maurer

3:30-5:00 P. M.      Training of Plant Materials Technicians

- a. Direct supervision.
- b. Workshops within groups of States.

John Schwendiman, Chairman  
Paul Tabor  
Morris Byrd  
E. L. McPherron



BELTSVILLE, MD.

MONDAY, Oct. 27

8:30-10:00 A. M. The program of the National Plant Materials Center at Beltsville - Robert Thornton.

10:30-12:00 A. M. How can the lag in the production of proven tree and shrub species to meet Soil Conservation District needs be overcome?

- a. Problems - reasonable cost, extent of demand, Service assurance of consistent demand, helping build up public demand.
- b. Service policy as concerns the supplying of Service materials to cooperating and non-cooperating commercial producers.

W. W. Steiner, Chairman  
Jesse McWilliams  
Wilson Hill  
E. L. McPherron  
C. T. Prout

1:30-3:00 P. M. The Service career program as related to Plant Materials work.

- a. Recruiting plant materials technicians:
  - 1. From training positions at Plant Materials Centers.
  - 2. From field specialists.
  - 3. From work units.
- b. How to develop a continuing source from which to draw - student trainees and specialists in related technical fields.
- c. Use of appraisal system.
- d. Minimum requirements for GS-7 and GS-9 training positions.
- e. Opportunity for special formal study to augment present training.

Miss Verna Mohagen

- 3:30-5:00 P. M. The urban problem - plant materials activities will likely be called upon heavily in some areas if the Service accepts the responsibilities for coping with the problems posed by urbanization. What can we expect to encounter, and how can we best contribute to such a program?

Kenneth Welton, Chairman  
Joe Ruffner  
Wilson Hill  
Virgil Hawk  
J. P. Jones

TUESDAY, Oct. 28

- 8:30-10:00 A. M. Is the SCS giving proper attention to a balanced plant materials program - kinds and quality of materials, cultural requirements, management?

W. C. Young, Chairman  
Don Douglas  
Jesse McWilliams  
P. F. Allan

- 10:30-12:00 A. M. The need for publishing information of an inter-regional nature.

- a. Plant Materials - example: wheatgrasses, beach grass, switchgrass.
- b. Cultural techniques - example: alternate row seeding of grasses and legumes.
- c. Management techniques - example: the use of herbicides in weed control.

M. D. Atkins, Chairman  
Virgil B. Hawk  
J. L. Schwendiman  
Morris Byrd  
Don Douglas

- 1:30-3:00 P. M. Study ways of participating in plant materials activities across broad geographical areas by W-F Plant Materials Technicians and F-Plant Materials Technicians as scheduled:

- a. Extending the testing of plant materials to determine larger use and adaptation areas.

- b. Determining the need for producing plant materials for field plantings.
- c. Exchanging technical information concerning results obtained on Plant Materials Centers and in field plantings.
- d. Combined workshops between group of States.

A. L. Hafenrichter, Chairman  
Paul Tabor  
Robert Thornton  
J. A. Downs  
J. L. Schwendiman

3:30-5:00 P. M. Miscellaneous items.

WEDNESDAY, Oct. 29

Agricultural Research Center, including the Plant  
Introduction Station, Beltsville, Md.

Summarization of Workshop.

THURSDAY, Oct. 30

Individual Conferences.

## THE SECOND WORKSHOP

A. D. Stoesz

Preparations for this workshop began early in the year and have been thorough and well planned. They began in May when we asked the Washington-Field Plant Materials Technicians to submit topics for discussion. These were reviewed individually and jointly with the WF-PMTs, and with the Division Director. On June 25 after some sorting and editing of topics, the agenda were agreed upon, assignments were made, and then sent out to all participants of the workshop. The Washington-Field PMTs were helpful in working with the Field PMTs in preparing suitable outlines of the panels and in treating the subjects for discussion. These came to me for review, thus enabling me to call attention to possible gaps or omissions, or to slight changes of emphasis to cover the subject more adequately. In this way I feel we have all had a part in thinking on these subjects and thereby may have reached a somewhat more united opinion on them without in any way destroying individual thinking.

Participation of Service personnel at the Second Workshop has been broadened considerably. In addition to the Assistant Administrator for Field Services, the Director of Plant Technology, the State Conservationists, State Soil Conservationists, the Washington-Field and Field Plant Materials Technicians and the Manager of the National Center, we also have with us the heads of Agronomy, Biology, and Plant Materials, and the Washington-Field Biologist and Agronomist for the Southeast. The attendance and general participation of our colleagues in the plant materials field is an expression of their interest and their desire to be helpful.

The purpose of this Workshop is:

1. To observe how we do our plant materials work in all parts of the country, thus providing opportunity for comparing ideas and sharing experiences on a wide scale.
2. To study and review the functions, policies, procedures and programs of the plant materials work with a view toward improving them.
3. To plan all phases of the plant materials work for the future carefully and well in order to enable the Service to do its work adequately and effectively.

During the course of this Workshop we shall strive to achieve these objectives.



## MAJOR ACCOMPLISHMENTS IN PLANT MATERIALS IN THE WESTERN STATES

A. L. Hafenrichter

Men, operating capital, and organization are the essential elements for continued progress in the plant materials phase of the soil and water conservation job. The great diversity of climatic and soil conditions and the complexity of conservation problems in the western States make the job of providing plants, cultural practices, and management methods difficult.

Two plant materials technicians' jobs have been reclassified and resulted in well-deserved promotions. Two others are now under consideration. We regret the pending transfer of one of our experienced Plant Materials Center Managers to another field of work in the Service. A promotion will accompany the action. It was a key position, and it will be difficult to fill. We also regret the loss of a most promising management agronomist at the same Plant Materials Center. After completing his M. S. degree he decided to undertake an entirely different line of work outside of the Service. Another young and capable management agronomist was transferred with promotion from another large Center to a field location in the Service. He was replaced with a capable but inexperienced man. We have always felt that tours of duty at Plant Materials Centers were an effective device for strengthening plant work in the Service. However, with only skeletal staffs at most Centers, quick turnover or the replacement of managers, or Plant Materials Technicians, is a real problem. It merits the recommendation that we might examine with profit the classification of employees in our phase of the work.

We are all proud of the Superior Service Award for the Aberdeen Plant Materials Center. The entire staff of the Center was named in the citation, along with Donald S. Douglas. This was a well-deserved award that was fully recognized by all Service personnel. Equally important, it was applauded by civic organizations, the cooperating experiment station, the State Association of Soil Conservation Districts, and leading ranchers.

An effective and welcome increased contribution to operating capital at one Plant Materials Center (Pleasanton) was made by the State Division of Conservation. This Division is thoroughly familiar with the work of the Center, reviews it regularly and carefully, and supports it generously. They are proud of the many accomplishments and the several forms of recognition that this Center has received. Another Center (Tucson) that is operated by a State experiment station has received some additional funds from other agencies, but for performing specific jobs for them.

Two procedural innovations have been instituted that facilitate field-size plantings and district seed increases. Two Plant Materials Technicians have developed 5-year plans by areas for scheduling plantings. This is done in area staff meetings for each Soil Conservation District in the area. The plans are revised annually. The advantages of this approach are obvious. They effect a more equitable distribution of seed and plant supplies, allow the supervisors of Soil Conservation Districts to select better cooperators, make the work of Plant Materials Technicians more effective, and, above all, are prepared with the men who can benefit most. The second new undertaking is to correlate plant performance with land capability units, work unit by work unit. The Plant Materials Technicians have always recorded mapping symbols on the forms for field plantings and District seed increase fields, but, to keep abreast of some changes in mapping, the use of the land capability unit offered the best integration of performance of plants and conditions of the sites in our heterogeneous part of the country. The Plant Materials Technicians were in some cases designated as leaders in this work and in other cases have undertaken it as part of the correlation with area staffs. The best method has been a complete and detailed effort in a work unit with the participation of the area staff members serving the unit. Where such men are available, other vegetative specialists complete the job in the other units. A byproduct of this effort is a projection of needs.

One of the areas served by one of our Plant Materials Technicians has appointed a committee on plant materials. This committee reviews and analyzes the results with field-size plantings and Soil Conservation District seed increase fields, makes recommendations for improvement, and presents new needs. Members of the committee inspect field-size plantings and increase fields, fill out the report forms, and send them to the Plant Materials Technician. They correlate plant materials recommendations with other field agencies working in the area and recommend revisions in technical guides. This committee was active in the plant materials-land capability unit correlation work.

Since our last meeting cooperative agreements have been completed with the Hawaii and Oregon Agricultural Experiment Stations for the establishment of Service-operated Plant Materials Centers. Work at both locations is well under way. Programs are completed and projects have been written. Two States have completed revision of their Plant Materials memoranda to make them conform more precisely to the language of Plant Materials Memorandum SCS-1 (formerly Administrator's Memorandum SCS-111). Another is now in final draft.



An agreement was completed in California for the cooperative testing of waterfowl food plants. Parties to the agreement are the Service, the State Department of Fish and Game, and the State Division of Soil Conservation. The Plant Materials Center has the major responsibility for the Service. Assistance in planning will be provided by the Washington-Field Biologist. An all-day meeting was recently held to draw up a preliminary work plan for 1958-1959.

New plants or improved varieties are a principal "stock in trade." In the West these are developed with needs of the field in mind, by an orderly process of testing in cooperation with the State experiment station or other applicable State agency, and jointly released as named varieties. If the plant is a grass or legume it is presented for acceptance to the Crop Improvement Association. Entirely new or now in production in SCD seed fields since the last meeting are LANA vetch, LATAR orchardgrass, and Coastal bermuda. Greatly expanded in use and now in full commercial production are WHITMAR wheatgrass, SIBERIAN wheatgrass, and DuPuits alfalfa.

Rapidly coming into recognition as a result of field-size plantings are CASCADE lotus and Lehman and Boer lovegrasses. Israel sweet-clover is showing promise. A plant long in good use was named, with the consent of cooperating agencies, ALKAR wheatgrass--a strain of tall wheatgrass. Three new varieties have been proposed to the American Society of Agronomy for registration.

New cultural techniques receiving wide acceptance following an intensive field planting program are the alternate-row seeding of CASCADE lotus with grass and the use of rice hulls to facilitate this kind of seeding with ordinary farm drills. Rice hulls are now stocked by seed companies. A very promising cultural technique in the southern part of the West is the method that combines removal of competing vegetation and the conservation of water prior to making rangeland seedings. The several variations in the method are correlated with range sites, with additional emphasis on soil type.

Seed production under the District Seed Field Policy is gradually expanding. The named varieties grown each year may shift from one to others as demands vary. Obviously, much seed is grown by producers other than in Soil Conservation District seed fields. It is almost impossible to obtain accurate estimates. This is not a complete list for Western States but gives an idea of the magnitude of production of the new things that have been developed as a result of cooperative work but primarily as a result of conservation needs and the plant materials personnel of the Service. One Plant Materials Technician tabulated estimated production of 18 named varieties being grown by cooperators with Soil Conservation Districts in parts of the three States he serves.

Total estimated production in 1958 was 533,000 pounds. Several fields of 16 of the 18 items were being certified or registered. Another Plant Materials Technician made a similar report showing more than 200,000 pounds of seed of several named varieties and many fields were being certified. The production of seed from this reporting area has increased 400 times in just the last 5 years. An estimated aggregate of all seed in seed fields of Soil Conservation District cooperators in the West would total much more than 1,000,000 pounds. All production from these fields originated with foundation seed produced at our Plant Materials Centers.

Publications are an important product of plant materials work. During the period since the last meeting seven articles by western Plant Materials Technicians have been published in technical journals. Two articles are in press, and three are in final draft. We frequently cooperate in publications among ourselves, with experiment station personnel, or with technicians in other parts of the country. Many articles have been written about the plant materials work of the Service by farm journals and trade magazines. Only those with a byline are reported here.

An important event in the information field is the production of a half-hour color film by a fertilizer manufacturing company. It is based on the 3-point range improvement program developed in California. The Service, more particularly the Field Plant Materials Technician, has a prominent part in the film that takes about one-third of the footage. A professional photographer made the film, and it is excellent.

Not everything is rosy all the time in the West. Within the last two years in the Pacific Northwest we have been plagued with "sweetclover sickness." Our Plant Materials Technicians, with their cooperators, quickly identified the trouble as a combination of 2, 4-D and weevil damage augmented by overdoses of nitrogen when the shift to annual cropping with fertilizers replaced old-line rotations. Now we are in the process of developing a "palatable" substitute. A prolonged impact of introduction lies ahead.

Mice infestation was severe in the West in the winter of 1957-58. Before its magnitude was realized, some fields of perennials, some cover crops, and some Soil Conservation District seed fields were heavily damaged.

New races of head smut constantly appear, especially in some species of Bromus. So far we have kept ahead of them by changing fungicides, but we badly need a sound breeding program to develop resistant varieties.



We can report definite progress in solving two major plant materials problems in Hawaii. We are obtaining important leads in the economical production of seed of some much needed legumes and with some of the grasses. Progress has already been made toward developing a system that will let us store seed in quantity successfully.

A major deterrent to a completely successful program of plant materials work is still the lack of complete and adequate management of established stands. Gradual improvement can be reported, but proper management is far from a universal experience. New plants have an appeal, cultural practices have improved materially, and management has yet to come.

## MAJOR ACCOMPLISHMENTS IN PLANT MATERIALS IN THE GREAT PLAINS

M. D. Atkins

### I. Improvement in Plant Materials Center Operations

A major accomplishment during the past year in plant materials work in the Great Plains States has been the improvements made in the organization and physical set-up at the Plant Materials Centers. The Los Lunas, New Mexico Center represents the only addition but it has helped to improve on the distribution of Center locations in the Great Plains. It was authorized earlier but development has come mostly during the last year. It is in conjunction with a new Experiment Station location and development has included construction of buildings, irrigation wells, and land leveling. There will be more details on our set-up there in one of the later discussions but the organization of personnel and physical set-up we have there promises to be one of our best operations.

We have made some moves or developments at each of the other locations that we believe will strengthen the program. In Texas, the southern location was moved from Crystal City to San Antonio at the beginning of the 1957 growing season. We have better control of the operations and better supervision of the work at San Antonio. For one thing, our Plant Materials Technician is located there. We still have some very difficult problems of management with the field operations of the Centers at San Antonio and Spur and the headquarters for the program established by the cooperator, the Texas Experiment Station, separate from either location at the Big Spring Station. In spite of this,

excellent progress has been made this past year in the initial increase of materials that are badly needed in the seeding program.

At Manhattan, a Conservation Aid with former Plant Materials Center experience has been reassigned on a part-time basis on the Center. He will give additional direction and supervision of the day-to-day work there and assist with distribution of seed and planting stock.

At Bismarck, an irrigation well is being added and the distribution system for an additional 30 acres of irrigation on the Plant Materials Center. The cooperating agency, the North Dakota Association of Soil Conservation Districts, is furnishing half the money for this installation. This will give a badly needed additional acreage under production at this location.

In Nebraska, we are in the process of moving our Plant Materials Center location and changing our method of operation. The land and irrigation facilities we have had at Scottsbluff have not been satisfactory. We are looking for a new location and if one is obtained, it is planned that SCS will operate the Center directly rather than through the cooperative arrangement we have had with Nebraska University. We will lose at least a year's work in the move but progress at Scottsbluff has been so unsatisfactory that both parties in the arrangement felt that a change should be made.

Over-all, we feel that our Plant Materials Center operations have been strengthened during the past year in the Great Plains States. We feel we have need for an additional Plant Materials Center location in north-central Wyoming or southern Montana. Plans have been submitted for the establishment of this new location. We do not yet, however, have authorization for it.

## II. Harvest of Native Grass Seed in the Plains

Harvest of seed from native grasslands is not new in the Plains. Over the years there have been extensive native harvests, particularly of bluestems and blue grama. But the accomplishment that was distinctive in 1957 was that a much greater part of the seed that developed on natural stands was harvested than in any previous year. Harvest of native bluestems and sideoats grama which has usually been confined to the Southern Great Plains has spread to Nebraska and, to a very limited extent, South Dakota. Western wheatgrass seed harvests extended from Texas to Montana. There was more green needlegrass harvested than ever before in the Northern Plains States. There were harvests of less common things such as prairie sandreed, vine mesquite, and alkali sacaton.



Another phase of this seed harvest that is a step in the right direction and an important accomplishment is the greater recognition of the importance of using locally harvested seed. There has been less indiscriminate moving of seed about the Great Plains. In western Oklahoma, for example, where they have in the past used seed from east Oklahoma, Kansas or Texas with no questions asked, they this year made an all-out effort to harvest bluestem, switchgrass, and Indiangrass locally and in many cases rejected the eastern seed. It was common for the seed purchaser to ask for information on the origin of seed and to give consideration to its adaptation to his planting site before purchasing.

This increased interest in seed harvest is in part due to a recognition by seed dealers and collectors of the expanded seeding program and increased demand for native grass seed in permanent plantings. Prices for native grass seed have been quite high and this is a natural attraction. But I think that this increased activity in seed harvest and this greater recognition of the importance of seed source also reflect the fact that SCS technicians in the field are generally better informed than they once were on seed needs, appraising fields for harvest, harvesting methods, and on the kinds and sources of material that best fit the site and objective of the plantings. A contributing factor to this is that we are now able to look at plantings made 10, 15, and even 20 years ago and to see what has given outstanding performance and what species or seed sources are weak for a particular site or use. These results are becoming a part of present technical standards, specifications, and recommendations.

### III. Progress in Grass Seed Production Under Irrigation

This is something that has been developing over a period of years yet greater progress was made in the last year than in all previous years. Plant Materials Technicians have given this phase of the work a high priority with training sessions and on-site assistance, particularly during the last two years.

The first grass seed production undertaken by Great Plains farmers was without irrigation. This was because SCS technicians and farmers alike have felt that grass seed production should be accomplished somewhat incidentally and would not require the effort and timely attention that other farm crops require. This feeling results from the fact our large production of brome grass seed and the seed harvests of native grasses come about pretty much accidentally. However, with some very skimpy research information and the experience of a few pioneering seed growers, many others have become convinced that grass seed production can be a profitable crop and that to be consistently successful seed production must be under irrigation.

During the last year, production of Blackwell, Caddo, and Neb. 28 switchgrass seed has for the first time more than equalled the demand. Production of El Reno and Coronado sideoats grama is approaching this point. District farmer-growers are getting into the production of some of the grasses that have not been previously grown for seed such as sand bluestem, little bluestem, Indiangrass, green sprangletop, plains bristlegrass, and Arizona cottontop.

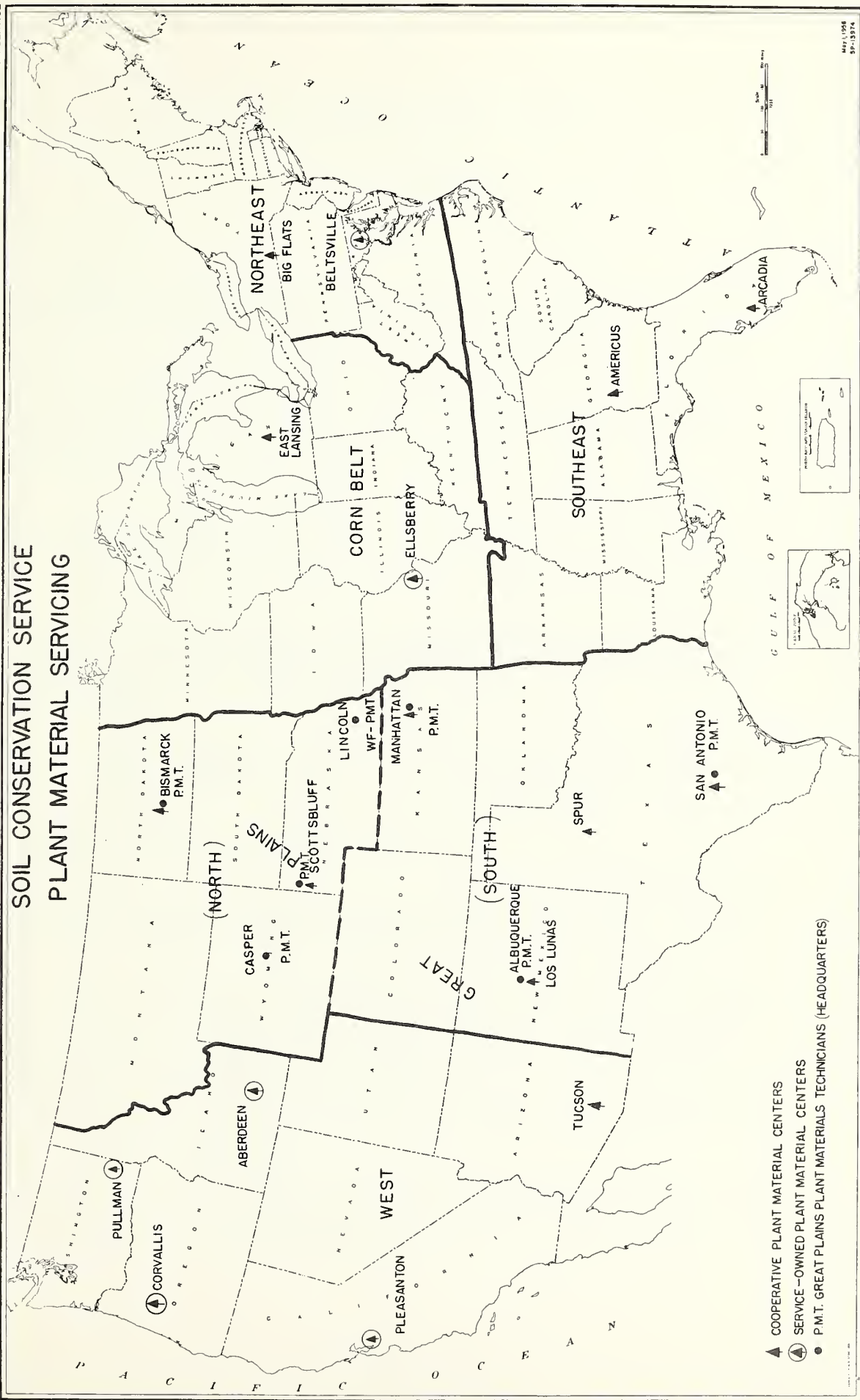
A concentration of seed producers has developed around Lubbock, Texas, Frederick, Oklahoma, and in southwest Kansas. In each of these localities there is land and irrigation facilities that are favorable to grass seed production. Also a nucleus of farmers that are particularly interested in producing seed as a cash crop. Considering how difficult some of these grasses are to handle and the limited information available on the seed production of some, the progress made has been exceptional.

#### IV. Evaluation of Established Shelterbelts or Windbreaks

We have many windbreak plantings in the Great Plains that are now 15 to 20 years of age. There is much valuable information to be gained by study of the performance of the many tree and shrub species included in these plantings. There has been very little systematic study of these windbreaks. A recent Forest Service survey and study is of considerable value but is weak in two respects. One, it does not relate species performance closely enough to specific soil conditions. Two, it does not give proper consideration to inter-association of species within the belt or planting.

During the last year some evaluation studies of selected windbreaks were undertaken jointly by some of the Woodland Conservationists and Plant Materials Technicians in the Great Plains. The first was made in Wyoming by Jesse McWilliams and Al Ford (copies of their report available). The second in South Dakota. Standard forms and procedure have been developed for gathering the information. These are expected to give some valuable information on performance of species by sites and planting arrangement. We may make the same mistake that was made by the Forest Service because it is difficult to get participation by the Soil Scientist. However, it is intended we will have specific soils information for each of the windbreaks studied.

# SOIL CONSERVATION SERVICE PLANT MATERIAL SERVICING



- ▲ COOPERATIVE PLANT MATERIAL CENTERS
- SERVICE-OWNED PLANT MATERIAL CENTERS
- P.M.T. GREAT PLAINS PLANT MATERIALS TECHNICIANS (HEADQUARTERS)



GULF OF MEXICO

Scale 0 100 200 Miles





MAJOR ACCOMPLISHMENTS IN PLANT MATERIALS  
IN THE CORNBELT

Kenneth Welton

1. New Michigan Plant Materials Center put into operation. Land and buildings secured, equipment purchased or otherwise available, seed dryer and seed storage room built, and manager under active training but actually assuming day-to-day management. Over 300 plant accessions under observation, approximately 30 acres planted for seed production, over 200 feet of propagating beds producing, approximately 2000 pounds seed and 10,000 plants allocated for Spring shipment, isolated seed orchards of woody materials planted and several supplementary studies underway.

2. Got Assistant Center Manager appointed at Elsberry Center. More time may now be devoted to studies, observations, and reporting.

3. Recruited and have under training new FPMT Kentucky and Missouri.

4. Have added over 200 new plant materials field sized plantings in past year. All well chosen to supplement those in effect - this brings total active plant materials field plantings to somewhere around 1800.

5. Are developing data, and with sizeable number of plantings, widespread interest in value of the following plants new to the Cornbelt:

S-37 Orchardgrass - In Ohio and Indiana as a more acceptable grass companion in alfalfa meadow mixtures.

Field brome - Michigan needs a more acceptable orchard cover crop for stone fruits. Field brome appears to be the answer. Is about ready for clearance and inclusion in specifications.

The work in orchard cover has also attracted a lot of attention to this grass as a winter cover on cropland in Kentucky, Ohio, Indiana, and Michigan (is spreading to other States). Field plantings for this type of cover have been very successful. Plant Materials introduced this grass into the Cornbelt from the Northeast and now everyone is trying to get in on the act. This is OK except that we would like time to summarize our data before other Technicians put it into specifications.

Creeping bentgrass - *Agrostis palustris*. Seeded on organic soil ditch banks and on seepy and wet mineral soil sites. Is showing

strong indication of being of considerable value. Good for wave action erosion control and for sodding wet ditches particularly on organic soils (where it will thrive at greater elevation from water table).

Varieties of Scotch pine - Selected for better shape and coloring than Scotch available on the market. Have tested and made field plantings of Nye branch, Nelson King, Booneville, and an Indiana ecotype. Booneville from New York State does not thrive in the Cornbelt. Nye branch and Nelson King is far superior to common stock.

Have renewed interest in use of Crownvetch for bank stabilization on critical areas. Are developing seeding technique vs. old method of clonal planting. Have discovered several large plantations and are looking for ecotype with more seedling vigor than "Penngift."

Stepping up use of switchgrass for waterways under extreme summer drouth conditions. Is really in introduction stage for this purpose and for conservation reserve plantings in Cornbelt.

Have good preliminary results with Reed foxtail in wet seepy waterways in Northern Great Lakes areas.

Are introducing "Midland" bermuda grass into Southern Cornbelt for summer pasture. At same time are testing at Elsberry against southern Cornbelt ecotypes.

Are working on adaptable bushes for intermediate windbreak plantings. We have revived interest in this whole matter with our work in large muck areas. Have made progress in thinning down list of satisfactory material.

Still working on improved material for living fence. Learning how to raise Cherry prinsepea and testing through Center and field plantings on multiflora selections. Some indication that we have a more hardy strain under evaluation.

Working on vines and trailing shrubs including trailing raspberry and creeping honeysuckle for wild areas.

Streambank improvement. Mostly work with willows. Best species for our purpose is evolving from this work.

Have established relations with six conservation department wildlife stations in three States where we can try out new species (of wildlife habitat improvement plants in particular) much as field evaluation plantings are used in the West.



Continue to work on pasture improvement. Some States do not feel the agronomists can get birdsfoot trefoil accepted in certain areas without field plantings - so Plant Materials have made such plantings after approval at State Office level. This work is valuable. A long struggle, but birdsfoot is the answer to permanent pasture in large areas of the Cornbelt.

#### MAJOR ACCOMPLISHMENTS IN PLANT MATERIALS IN THE NORTHEAST

W. W. Steiner

1. Major effort was put on filling the vacant field plant materials technician positions with competent men. Upon filling the positions, considerable time was spent with the new men in the field in order to review past work and acquaint them with their responsibilities.
2. Attention was given to improving our work at the Big Flats Plant Materials Center. At our request, Mr. Curtis Sharp was hired by the cooperating agency to be responsible for the plant materials work. He also provides the needed liaison between the Service and the Agricultural and Technical Institute of New York who operates the Center. An improved annual work plan for the Center was prepared by the plant materials technicians. As a result, considerable improvement has been noted in:
  - a. The quality of accession records and observational notes.
  - b. The observational plantings.
  - c. The quality of seed and stock received for field plantings.
  - d. The seed cleaning equipment and procedures.
3. Emphasis was placed on assisting the Northeast States in developing State policy and procedure memoranda for the plant materials phase. All Northeast States now have such memoranda in effect.
4. The cooperative Black Locust Improvement Project with the U. S. Forest Service's Central States Experiment Station and Agriculture Experiment Stations is well under way. Agreement was reached that the National Plant Materials Center would be the sole producer of clonal black locust planting stock developed

by SCS for use in the replicated plot plantings. Considerable interest is building up in this project, which, it is hoped, will lead to the development of borer-resistant black locust of improved form and vigor. Field plantings will be made utilizing these clones, and will be concurrent with the research plots being established by our cooperators.

5. Harry Porter, Jr., Plant Materials Technician at Big Flats, N. Y., discovered and reported the presence of rhizomes in tall fescue. As a result of the report, the Agricultural Research Service is working toward developing strains with strong rhizomatous habits. Similar work is under way at the Big Flats Plant Materials Center. Adding the strong creeping tendency to tall fescue's other desirable features will provide a highly desirable plant for conservation use.

6. Waterway stabilization continues to offer major problems over much of the Northeast. Much attention is given to field plantings in waterways, and considerable progress has been made. A Northeast SCS committee prepared a report on waterways which was well accepted by the State staffs. Many of the recommendations for stabilization and management were based on the results of plant materials field plantings.

The use of jute matting or tied-down straw mulch for protecting new waterway and other critical area seedlings shows promise and will receive accelerated attention in field plantings.

7. Sand dune and tidal river bank stabilization is receiving a great deal of attention as the result of needs declared in several States. A cooperative project for studying sand dune stabilization is under way with the University of Rhode Island. Preliminary results with field plantings on sand dunes and tidal river banks show real promise, and such work is expected to increase in volume.

8. Autumn olive has now been tested sufficiently to permit recommending it for wide use as a wildlife plant in the Northeast. The Northeast W-F Biologist and W-F Plant Materials Technician jointly prepared a leaflet entitled "Autumn Olive--For Wildlife and Other Conservation Uses". The leaflet is scheduled for publication in the near future.

9. Intensive tests to determine adaptability of plants for stabilizing strip mine spoil was initiated in three States. Special attention is being given to the need for better surface protection during the first five years after the spoil is planted to adapted tree or shrub species. Grasses and legumes adapted to conditions of low fertility and low pH are being assembled for test on the spoil areas.

MAJOR ACCOMPLISHMENTS IN PLANT MATERIALS  
IN THE SOUTHEAST

W. C. Young

This year was one in which a concerted effort was made to determine the northern limits of use of two of our principal bahia-grass strains, Wilmington and Pensacola. Three of our Field-Plant Materials Technicians worked on a coordinated program and made significant contributions. We have established tentative lines on the map which should greatly aid in settling this problem. Heretofore, we have not had a sufficient number of plantings, nor sufficiently reliable observations to do this. While not completed, it is now well coordinated. We should be able to make positive headway in the immediate future.

Ball clover, a winter annual, reseeding legume, was first distributed from the Thorsby Nursery a number of years ago, and has been making friends of cooperators in the Southeast since that time. It is particularly good as a reseeder on certain sandy sites where trouble with reseeding of Crimson clover is often experienced. In Alabama where it was first field planted, it made the commercial market during 1958 as a crop seed for the first time. This is very important for us inasmuch as an organized seed producer's association does not exist. But when the commercial seedsmen take on a crop for sale, it means it has received acceptance.

In Louisiana, both Argentine bahia and Pensacola bahia were accepted for ACP cost-share payment during the year on the basis of documented field planting evaluations. In this State prior to 1954, there was practically none of either variety. Service field plantings have served to stimulate farmer acceptance and use, and to place it on the recommended list of conservation crops for use in that State.

Mr. Martin, State Conservationist in Louisiana, is quoted as having said that "the plant materials work in Louisiana ranked second in outstanding accomplishments during 1958 (or perhaps first) among the various phases of the Service's program."

Browntop millet was almost a complete unknown outside of Georgia and South Carolina only 4 years ago. Field plantings have significantly contributed toward putting it into use in Arkansas, Louisiana and Alabama. It is useful as a high quality, quick growing forage, and as a food plant (seed) for ducks. In Arkansas and Louisiana, the wild duck angle has been stressed. Significant results in terms of attracting ducks and holding



them have been secured. In Alabama in 1954, 100 pounds of seed were purchased by one farmer in Elmore County on the advice of Mr. Tabor, Field-Plant Materials Technician serving that area. In 1958, over 100 tons of seed were harvested in that county. All of it is expected to be used in that general vicinity in 1959. Here, the emphasis is on forage production.

The Plant Materials Center at Arcadia got into a full program during the year. Something approaching 600 accessions have been planted for screening and evaluation. Many things of significance are coming out of the Center. One, among several, for its negative significance, is the fact that we have found there that we do not know how to establish *Okinawa sericea* in Florida. A few years ago it showed promise at the old Brooksville Nursery. Since that time it has been increased at Americus for field plantings but the establishment methods for Americus will not work in Florida. This, of course, emphasizes the need for Centers in different climatic, soils and growth zones. In addition, several badly needed crops for field plantings have been grown that were impossible to secure heretofore. The personnel involved at this Center deserve commendation for an outstanding job done in such a short time.

Switchgrass is proving to be a good potential for use in gully control as evidenced by plantings in North Carolina, Tennessee and Mississippi. This is somewhat contrary to predicted requirements for this plant. Early work has been done with the Blackwell variety. In the 4 years it has been under observation, it has been as good as any, and better than most until 1958. During this year, it diseased badly almost everywhere. Local accessions have been assembled and are being studied for use in the Southeast. One, Pangburn Switchgrass, is particularly outstanding for vigor and disease resistance.

*Lespedeza japonica* has been compared with *lespedeza bicolor* for 4 years now in Northeast Arkansas. As a source of quail food, *japonica* is as good as *bicolor*. During this period, *Lespedeza bicolor* has made practically no seed any year, and *Lespedeza japonica* has produced seed every year. During 1958, we have assembled the first measurements of seed yield for this comparison. We hope to get out an article on this outstanding result at an early date.

PANEL 1. THE BENEFITS OF FIELD EVALUATION PLANTINGS

1. Field Evaluation Plantings are recognized and provided for in Plant Materials Memorandum SCS-1. It was agreed that the wording of the Memorandum covers this type of comparative evaluation in intent and provides for the proper correlation among Plant Technologists and for the approval of the line officer.
2. Field Evaluation Plantings are small plantings of several promising new species or varieties of plants, cultural practices, or management methods where problems of soil stabilization or management occur that cannot be comparatively evaluated at a Plant Materials Center.
3. Field Evaluation Plantings have these objectives: (1) To serve as an intermediate evaluation step between evaluations at a Plant Materials Center and final evaluation in Field (Size) Plantings; (2) to obtain critical evaluation of several selected species or varieties of plants or cultural and management practices in a problem area not represented by the Plant Materials Center; and (3) to reduce the kinds and numbers of plants or methods for final evaluation in Field Plantings.
4. Field Evaluation Plantings have proved to be a logical second step in an organized and progressive system of testing plants for use in conservation work. These are conducted under controlled conditions and, wherever possible, with agricultural experiment stations or other official cooperators. Best results are obtained on branch experiment stations or field stations that represent climatic and edaphic conditions in the problem area. Control of the land and proper care and use of the plantings has been a major contributing factor to success.
5. Field Evaluation Plantings, as used in Plant Materials work, are efficient. They are organized, assistance of cooperators is provided, a minimum of SCS personnel time is required, and costly errors in appraising performance are avoided.
6. Experience shows that, wherever it is possible, Field Evaluation Plantings should be a function of the staff of the Plant Materials Center. However, they may be conducted under the leadership of a Plant Materials Technician if they cannot be done by the Center staff, but they should be organized and the required approval should be obtained.

#### RECOMMENDATIONS:

1. Plant Materials Memorandum SCS-1 and Plant Technology Memorandum SCS-1 are adequate in policy and procedure for conducting Field Evaluation Plantings in the Plant Materials phase of the program of the Service.
2. Recognition should be given to the need for flexibility in the procedure for conducting Field Evaluation Plantings in the different sections of the country, but it would be advantageous if the Head Plant Materials Technician documented the procedures where such plantings are in successful use and made this material available nationally.
3. Further consideration should be given to the following "Standards for Field Plantings" as presented by the panel and as modified by discussion in the workshop:

#### STANDARDS FOR FIELD EVALUATION PLANTINGS

V. B. Hawk

#### DEFINITION:

Small-sized plantings of several promising new species or varieties for on-site comparative evaluation where unique problems of soil stabilization and management occur.

#### OBJECTIVES:

1. To serve as an intermediate step between supplemental trials at Plant Materials Centers and final evaluation in Field Plantings.
2. To obtain critical evaluation of several species or varieties under specific climatic and edaphic conditions and special management and utilization situations.
3. To reduce the numbers of kinds of plant materials for final evaluation in Field Plantings by preliminary trial at strategically located sites within plant-growth zone served by the Plant Materials Center.



CONDITIONS WHERE APPLICABLE:

1. On unique conservation problem sites which are not adequately represented by a Plant Materials Center and which differ from the Plant Materials Center to a major degree in soil, climate, land use, conservation practices, livestock management, or wild-life populations.
2. When there are available several species, ecotypes, varieties or strains of apparently similar adaptation within a conservation use group.
3. Where present information does not warrant selection of a particular plant material for final evaluation in Field Plantings.

BROAD OVER-ALL SPECIFICATIONS:

1. Plant materials must have had at least a preliminary screening in the initial observational rows at the Plant Materials Center.
2. Site must be carefully selected to represent a significant problem area within the plant growth zone served by the Plant Materials Center.
3. Facilities must be available for optimum establishment, evaluation and perpetuation of the plantings.

FUNCTIONS OF PLANT MATERIALS CENTER OR FIELD PLANT MATERIALS  
TECHNICIAN:

1. Select the plant materials, site and facilities for the plantings.
2. Develop the project, prepare the planting plan and supervise the establishment and management of the plantings.
3. Evaluate the plantings, prepare a report and recommend final disposition of the plant materials.

FUNCTIONS OF COOPERATING AGENCIES:

1. Actively cooperate in supplying plant materials, sites and facilities for plantings.
2. Actively cooperate in establishment, management, and evaluation of plantings.
3. Actively cooperate in preparation and publication of reports and recommendations from plantings.

PANEL 2. PLANT MATERIALS IN THE GREAT PLAINS PROGRAM

1. Size of the Land Conversion Job. Formerly cultivated cropland to be converted to permanent vegetation is estimated at 15 million acres, or 25 per cent of the cropland acreage. An additional six million acres of rangeland needs reseeding and other improvements.
2. Factors that determine the rate of progress are, first of all, the availability of seed and the amount of suitable equipment. Other factors are: Favorable conditions for a seed crop of native grasses, stocking of seed supplies for future use, and special seeding equipment.
3. The SCS Technical Standards determine the kind of plant materials that are needed for seeding. Alternatives are offered for choice, depending on suitability of sites and availability of supplies within safe limits.
4. Current need estimates are sometimes obtained from Area Plant Materials Committees and summarized to reflect State needs. A uniform procedure for annually compiling plant materials needs estimates by States is needed.
5. Stands from native grasslands have for the most part supplied the needs for grass seed in the past. Guide sheets are prepared to assist farmers and ranchers in determining what is a harvestable stand, estimating potential yield, and making machinery adjustments.
6. Locally adapted ecotypes are collected and increased at Plant Materials Centers for later release to seed producers.
7. Planned seed production by growers having good land, proper equipment, irrigation, and aptitude for the job present a real need. The need for some kinds of grasses is now partially met within the Great Plains but this may be speeded up by producers from the West and the Cornbelt.

RECOMMENDATION:

That an inventory of grass seed needs species by species be compiled based on the seeding program planned for 1959 in the Great Plains States; this inventory to serve as a guide for continuing emphasis on production of grass seed within the Great Plains States and for the use of others in developing production wherever possible outside the Great Plains.



PANEL 3. FUNCTIONS OF THE PLANT MATERIALS TECHNICIANS AND THEIR  
RELATIONSHIP TO OTHER SPECIALISTS AND SOIL CONSER-  
VATIONISTS ON STATE PROGRAM STAFFS

The panel members recognize that Plant Materials work is a part of the Plant Technology phase of the program of the Soil Conservation Service in its assistance to soil conservation districts. The functions of the Plant Materials Technician are given in Plant Materials Memorandum SCS-1. The relationships of the Plant Materials Technician to other technicians and to State program staff members are given in Plant Technology Memorandum SCS-1. Plant Materials Memorandum SCS-1 states the policies and outlines the procedures for conducting plant materials work.

The principal functions of the Plant Materials Technician are:

1. Under the direction of the Soil Conservationist on the State Program Staff, develop the needs for plant materials, cultural practices, and management methods.
2. Develop effective programs to meet the needs. This includes assembly, testing, initial production, field plantings, maintenance of foundation stocks, and increases of plant materials in soil conservation districts.
3. Correlate all programs with other Plant Technologists under the direction of the Soil Conservationist on the State Program Staff, obtain the required concurrence of official cooperators, and obtain the approval of the State Conservationist.
4. Assist Plant Materials Centers with annual work plans for testing plants and methods according to approved programs.
5. Prepare and carry out annual work plans for field plantings and seed or plant increases in soil conservation districts. Correlate plans through the Soil Conservationist on the State Program Staff and obtain approval of the State Conservationist.
6. Report the results of field plantings and make recommendations to the State Program Staff concerning plants and methods that would improve conservation work.
7. Assist the State Conservationist and provide leadership in conducting technical conferences and workshops in the use, culture, and management of plant materials.
8. By delegation from the State Conservationist, maintain relationships in the Plant Materials field with State, Federal, and private research agencies; crop improvement associations; commercial companies; and others in the area served.

Other functions of the Plant Materials Technicians are:

1. Maintain a current list or be prepared to supply information on producers or vendors of plant materials needed in conservation work.
2. Provide information on plants--domestic and foreign, information on cultural and management requirements, and information on possible uses of plants which would further the objectives of conservation work.
3. Work closely with the Soil Conservationist on the State Program Staff, over and above the required correlation of programs and work plans and the preparation of reports, to keep him currently informed on progress in the field of Plant Materials.
4. Use available facilities for self-improvement and professional competence.

The discussion of the presentation by the panel showed that many effective methods were being used for carrying out the functions of the Plant Materials Technicians and for maintaining relationships. The methods in use are not entirely uniform across the country.

#### RECOMMENDATIONS:

1. That Plant Materials Memorandum SCS-1 and Plant Technology Memorandum SCS-1 adequately provide for the functions of the Plant Materials Technicians, for procedures in conducting plant materials work, for coordination of plant materials work with other plant technologists, and for the approval of programs and work plans by State Conservationists.
2. That continued effort be made to work with the Soil Conservationist on the State Program Staff, who coordinates the work in plant materials with that in other plant technologies in order to further strengthen the plant technology phase of the program of the Service.
3. That a survey of effective procedures for each of the principal functions of the Plant Materials Technician should be made before issuing suggested memoranda outlining procedures for carrying out any function. Several procedures have long been in use and have the approval of staff members and line officers.

PANEL 4. RELATIONS WITH EXPERIMENT STATIONS AND OTHER STATE AND FEDERAL AGENCIES.

A. Assisting line officers with relations problems in plant materials:

1. Plant Materials Technicians are representing the State Conservationists in contacts with State and other Federal agencies, therefore such contacts should be made in accordance with the wishes of each State Conservationist.
2. Research agencies, both State and Federal, are the sources of much of the technology used in Service work.
  - a. State Experiment Stations expect recognition as the authority for and source of agricultural recommendations made to the public within the States they serve.
  - b. Research agencies are continually developing new techniques and materials, some of which may be applicable to the work of the Service.
3. Research agencies, as well as other concerned State and Federal agencies, should be kept informed of plant materials work and encouraged to cooperate with us.
  - a. Through joint conferences, review problems and plant materials program.
  - b. Through joint field trips to review problems and evaluate results of field plantings.
  - c. In recognizing and releasing new plant materials species and strains developed through plant materials work.
  - d. "Cooperation is a two-way road--he who gives, gets"!

B. Keeping abreast of techniques related to plant materials.

1. Plant Materials Technicians should get thoroughly acquainted with the work and workers at State, Federal, and private research stations; commercial nurseries, seed growers, seed dealers, and equipment manufacturers.



2. Plant Materials Technicians should belong to professional societies, attend their meetings, and review their publications.
  3. In-Service workshops permit review and exchange of information on new techniques. Where possible, representatives of experiment stations and other State and Federal agencies should be invited to attend and participate.
  4. Plant Materials Technician assistance to State staffs will be most effective if he keeps up-to-date on new techniques developed by all agencies concerned with related work.
- C. Representing the problems and needs of the S.C.S. for new and improved plant materials to other agencies.
1. Plant Materials Technicians and other plant technologists should assist State staffs in determining and presenting plant materials problems and needs requiring other-agency cooperation.
    - a. Those requiring research treatment for solution.
    - b. Those concerning shortages of seed or stock.
  2. Those that can help solve problems and needs include State experiment stations, State agencies, Federal research centers, industry, commercial nurseries, soil conservation districts.
  3. Problems and needs should be presented through formal reports (ex.--Research Needs Report), formal requests, informal letters, personal contacts.
  4. Problems and needs may be presented by the Administrator, State Conservationists, Research Liaison Representative, W-F Plant Technologists, and other S. C. S. line or staff employees.

RECOMMENDATIONS:

1. Wherever possible, plant materials work should be carried out in cooperation with State experiment stations and other concerned State and Federal agencies.
2. Plant Materials Technicians contacting State and other Federal agencies for the purpose of establishing, maintaining, or improving cooperative relationships are representing the State Conservationists and their staffs, and should conduct themselves accordingly.
3. Plant Materials Technicians should continually keep up-to-date on plant and technique developments by State, other Federal, and private research agencies through personal visits, review of literature, and participation in technical societies.

PANEL 5. EVALUATING OPERATIONS OF PLANT MATERIALS CENTERS

1. The panel recognized that the policies governing the operations of Plant Materials Centers were considered adequate as given in Plant Materials Memorandum SCS-1.
2. The panel noted that three methods of managing Plant Materials Centers are in use:
  - a. Indirect - by an experiment station or a similar agency under cooperative agreement to carry out annual plans of work developed by the Service and the station based on the needs of the Service.
  - b. Partially indirect - by agreement as above but with a full-time Soil Conservation Service liaison representative.
  - c. Direct - usually according to memoranda of understanding by the Soil Conservation Service with other agricultural agencies.
3. Certain advantages and disadvantages exist under each method of operation. The panel agreed that the advantages of Service operation outweighed the disadvantages.

The panel agreed also that only those Centers that are operated directly by the Service could perform all the functions properly in line with existing policies.

4. The panel further noted that cooperation with agricultural experiment stations in every sense is possible under any system of management.

#### RECOMMENDATIONS:

1. That the Service convert facilities of Plant Materials Centers to operations directly administered by the Service as is opportune.
2. That during the interim those cooperative agreements pre-dating the national policy for Plant Materials Center operations be re-negotiated.
3. That an analysis be made of the operations of the Centers to determine how well they conform to national policy as set out in Plant Materials Policy No. 1.

#### PANEL 6. TRAINING OF PLANT MATERIALS TECHNICIANS

Training actually begins with recruitment and should as fast as possible bring the trainee into full production. The objectives of training in the SCS are:

1. To develop a high degree of competence in all employees.
2. To enable employees to grow and accept greater responsibility.
3. To give them a full appreciation of a coordinated soil and water conservation program.
4. To increase the effectiveness of the SCS.

The following memos concerned with training were reviewed:

Administration No. 66 - Training in the SCS

Personnel No. 4 - Objectives of training

10 - Training centers

11 - Student trainees

12 - Administrative trainees

40 - Committees - training, safety and awards

State memos supplement the above to provide additional guides. In many States, provisions are made for orientation training in groups, training plan outlines by jobs, training plans by areas, and plans for each employee. Every employee should continue development outside of regular working hours.

There are many potential Plant Materials Technicians among SCS employees. We should constantly look for capable and qualified people by making contact with all field technicians. Training is best given through contact with Plant Materials Technicians at Plant Materials Centers, in workshops, or in the field where activities and problems exist. Give new men training they need and it will be effective.

In the past recruits came up through the Plant Materials Centers where they became thoroughly familiar with the science and art of plant materials work. There is no real substitute for such training and every opportunity should be taken to use it to the fullest extent.

Direct supervision is a good tool for improving the work of an employee. It should be used more fully in plant materials work. Indirect and informal supervision are effective. Problems are defined, discussed and analyzed but the trainee is left to make the decisions based on local atmosphere and methods of operation. The effectiveness of supervision can be measured by the improvement in the quantity and quality of plant materials work.

Workshops and training conferences are used in progressive education. The terms are much used but poorly understood. The words "conference" and "workshop" are used to avoid using the terms "meeting" or "convention." Objectives are:

1. To get acquainted with other workers.
2. To give and receive information on new materials and techniques.
3. To receive inspiration.
4. To make plans for future work.

Workshops should be held at intervals of two to four years at the least busy season of the year.



Individual training is an important part of SCS. Plant Materials Technicians are not primarily agronomists, biologists, woodland, soil or range conservationists, they must be acquainted with the problems and solutions in all fields of plant technology. Individual guides which include a written record of a new man's needs and progress are valuable. Include his background, personal interests, limitations and other needs. State how, where, when and by whom training is to be given. Use the standards of performance in developing guides. Guides should be developed by the trainee and his immediate supervisor. It normally requires one day to write the outline, a month to clear it, and a year to do the training.

#### RECOMMENDATIONS:

1. The memos on training are well written and adequate. We recommend that they be followed.
2. The time devoted to plant materials at the SCS training center should be increased to a minimum of 8 hours.
3. We should be continually on watch for good men with potential for work in plant materials, make use of the trainee program and get training positions established in plant materials.
4. A check list should be developed for use in making individual training schedules for the various positions in plant materials.

#### PANEL 7. HOW CAN THE LAG IN THE PRODUCTION OF PROVEN TREE AND SHRUB SPECIES TO MEET SOIL CONSERVATION DISTRICT NEEDS BE OVERCOME?

- A. Problems in getting production of proven tree and shrub stock.
  1. Few Soil Conservation Districts are organized or equipped for woody stock production.
  2. State nurseries are often restricted from growing shrub stock, or where they do they cannot ship outside of State.
  3. Commercial nurseries have generally not taken up quantity production items for sale at cost low enough for District use.



- a. Prefer producing high return specimen stock.
  - b. Want assurance of demand before entering into production.
- B. Methods suggested for getting production of proven tree and shrub stock.
- 1. PMTs give publicity to proven new species or strain via bulletins, informational articles, personal contact with potential producers.
  - 2. Establish total annual District stock needs as a guide to potential producers.
    - a. State offices conduct a survey by Districts.
  - 3. PMTs and State staffs encourage District co-operators to produce stock. Provide them with seed or cuttings, and technical guidance in growing.
    - a. Soil Conservation Districts.
    - b. State nurseries.
    - c. Commercial nurseries.
  - 4. District cooperators and cooperating State and commercial nurseries should be encouraged to establish seed orchards and cutting blocks of needed species and varieties from materials furnished by the Service.
- C. Service policy as concerns the supplying of Service materials to cooperating and non-cooperating commercial producers.
- 1. Administrator's Memorandum Plant Materials I adequately covers the policy on furnishing woody propagules to cooperators of the Service, but does not clearly cover the supplying of such material to non-cooperators.
    - a. It was recommended that cooperative agreements be drawn up with all non-cooperators as a prerequisite to furnishing them with woody propagules.

- b. The question of what procedure to follow in the event a potential producer would not become an official cooperator was not answered by Plant Materials I, in the opinion of the panel.

RECOMMENDATIONS:

1. Plant Materials Technicians should encourage staffs to determine the extent of shrub and tree stock shortages within their States, and then assist State staffs to overcome such shortages by encouraging District cooperators and State or commercial nurseries to produce the needed materials.
2. Clarification is needed regarding Service policy as it affects the furnishing of woody propagules to non-cooperating producers of planting materials.

PANEL 8. THE SERVICE CAREER PROGRAM AS RELATED TO PLANT MATERIALS WORK (from recorder's notes)

Miss Mohagen conducted the discussion by questioning the group on what was desired in the procedures used in recruiting and developing plant materials technicians. Miss Mohagen also briefly discussed the new special opportunity for formal study by Service employees. The following are points discussed, with any agreements reached noted:

- A. The question of the type of man needed for the plant materials technician position was discussed. It was agreed that a good technical background is essential, but that the selection could not be made according to a formula. The group generally felt that the candidate should have work unit or Plant Materials Center experience, be a good plantsman, and have broad interests in the use of plants.
- B. As regards the position of Plant Materials Center manager, the group agreed that training in any of the plant science fields would qualify, provided the candidate also knew plants well, was adept at growing them, and was well versed in agriculture.
  1. Sources for recruitment.
    - a. College graduate--send to work unit and/or Plant Materials Center for experience.
    - b. Student trainees at Plant Materials Centers.

2. Title of Plant Materials Center Manager.

- a. The group agreed that the Center Manager's title should be Management Soil Conservationist, instead of the previously used Management Agronomist title.

3. Plant Materials Center Managers will be a valuable source of trained candidates for the field plant materials technician positions.

C. Use of appraisal system.

1. Most people appraising Specialists and Work Unit personnel are not aware of the requirements for plant materials technician nor of the field of opportunity offered in plant materials.

- a. Plant materials technicians should inform persons appraising work unit conservationists of those who show a potential for the plant materials technician position.

D. New legislation enables the Service to finance formal study for employees at non-federal facilities.

1. There will be no more than 1% of the total employees in training during a given period.
2. Training is for the purpose of making the employee more effective to the Service rather than to give the employee another degree.
3. The Secretary of Agriculture is expected to issue a policy to guide the use of the formal study permitted under the legislation.

PANEL 9. THE URBAN PROBLEM AND PLANT MATERIALS

The urban problem has become serious in many parts of the country due to the fact that approximately one million acres of productive farmland are taken out of agricultural use each year, and that the conservation job is compounded by having to work with many small-scale landowners.

1. The panel agreed with Dr. Beaumont, former State Conservationist, Massachusetts, that the problems are chiefly these:
  - a. Farming declines sharply in the general area where cities and towns run together.

- b. In some States zoning ordinances are enacted to hold down taxes on farmlands that are under urbanization pressure, often unsuccessfully.
  - c. The general public has little interest in the loss of farmland so long as food is abundant, but it is interested in conserving land for recreation and for water storage.
  - d. The farmer is not generally interested in zoning. Seeing urban encroachment coming he sees the opportunity to sell his land at a much higher price than land for farming would bring.
- 2. The Service recognizes that in many States expanding urban areas increase the number of part-time farmers and thus creates problems not usually met in normal District operations.
  - 3. The "rurbanite" requests help on plant materials that are suited for aesthetic uses, for quick cover on sub-soil in construction areas, for wildlife plantings, for lawns under shade or on sandy soils, for stabilizing ditch banks, for recreation and play grounds.
  - 4. Assistance is often provided on a group basis and by means of guide sheets that can be made very effective.
  - 5. The rurban problem has reduced the number of SCD cooperators and the number of farm plans.
  - 6. In some States urban land is excluded from SCD responsibility. In others District governing bodies assign a very low priority to rurban requests.
  - 7. The National Association of Soil Conservation Districts has set up a committee to work with the SCS on a joint policy statement.

RECOMMENDATION:

- 1. There is need for a more detailed national policy for the SCS in working with urban and "rurban" landowners.
- 2. Individual States should set up guide lines covering services that may properly be provided at the Work Unit level; such guides to be within the framework of the present national policy. These would be adjusted as changes in national policy are made.



PANEL 10. A BALANCED PLANT MATERIALS PROGRAM

1. A definition for balance in kind and quality, etc., is that balance between appropriate evaluation activities of new and better plants and improved cultural practices to meet the needs of districts in planning for and applying soil and water conservation on farms, ranches and watersheds.
2. Several effective methods are in use throughout the country for determining plant materials needs. Those methods have in common: (a) they are relatively simple, (b) they are done at the local level, and (c) they are done with the help of the State Soil Conservationist.
3. The Soil Conservationist on the State Program Staff is responsible for the plant materials activities in his State; and the Soil Conservationist, working with the W-F Plant Materials Technician, coordinates the activity. Hence, the plant materials staff looks to him for guidance in determining the emphasis to achieve balance. It was apparent that the soil conservationist on the State program staff plays a significant part in achieving balance. This was apparent not only in the deliberations of this panel, but in several others.
4. Balance, operationally, varies widely but usually its presence or absence is a response to expressed needs by work units and the soil conservation districts served.

Historically, balance was disrupted at the policy level preceding the recent reorganization of the Department. At that time, the plant materials function lost in balance, but it has been restored in principle in the current policy.

5. Cultural requirements and management are inseparable components of a balanced plant materials program.

Center facilities are generally inadequate to meet certain types of need. For example, studies of plant responses to wet land and the evaluations of other native plant materials requiring wet habitats are not represented. For better balance of our plant materials program we need more basic information about the relationships of such plants to soils and sites, etc.

RECOMMENDATIONS:

1. It is recommended that State conservationists give their attention to balance of the plant materials program through the activities of their staff soil conservationist.

2. The W-F Plant Technologists should make use of the channel via soil conservationist on State Program Staff for expression of their needs for plant materials work in their respective fields as well as through the direct method of advising the W-F Plant Materials Technician.

3. The Head Plant Materials Technician should assemble information as to how needs are presently determined for further consideration by a suitable panel.

PANEL 11. PUBLISHING INFORMATION OF AN INTER-REGIONAL NATURE.

1. There is a need for greater inter-regional testing of plant materials and planting techniques. Because of the lack of this in the past we are not ready for publications involving results in more than one group of States.

2. Consideration should be given at the national level for developing a more systematic procedure for exchange of plant materials for inter-regional testing and for the reporting of results of plantings with a certain species or strain.

3. As a basis for greater exchange of information, each W-F Plant Materials Technician should compile a list of the plant materials in initial seed increase and of foundation materials being maintained at each Plant Materials Center. Such lists will include a description of the characteristics that distinguish this strain, the area of adaptation it is expected to have, and the use it is expected to have in the conservation program. The lists will be revised annually and exchanged between the W-F Plant Materials Technician in adjoining groups of States.

4. Materials exchanged for regional testing should be accompanied by a complete description including all the information available on adaptation, cultural, and management requirements and use limitations. Too frequently materials are exchanged with only meager information on the plant.

5. Most national and inter-regional bulletins are too general to be of much value to farmers or local technicians. Often they are not timely because of delays in publication. However, the need for additional publications of national or inter-regional scope should be carefully re-examined and specific recommendations made by each group of States on the need for such publications.

6. As a counteraction to the tendency for us to become regionalized by SCS administrative boundaries, schedules of W-F and Field Plant Materials Technicians should provide for adjoining PMTs to spend not less than one week in the field together on one side of the dividing regional line not less frequently than every two years.

## RECOMMENDATIONS:

1. That consideration be given to developing a practical system of "inter-regional" testing of plant materials during the evaluation period. The objective being to have information on the range of adaptation and use of new species and strains for reports and publications both prior to and at the time of official release.
2. That each W-F Plant Materials Technician attempt to develop a list of plant materials in initial seed increase and of foundation-quality materials being grown at each Plant Materials Center. The list should include a brief description of the characteristics that distinguish the strain, the area of adaptation, and use it is expected to have in the conservation program. The lists would be exchanged between W-F Plant Materials Technicians for use in adjoining groups of States.

### PANEL 12. PLANT MATERIALS ACTIVITIES ACROSS BROAD GEOGRAPHICAL AREAS

The Soil Conservation Service has a national program of assistance to soil conservation districts. This program is adapted to conditions that obtain in each State and Territory. The coordination of the plant technology phase of the program among States is provided by Washington-Field Plant Technologists who serve each of five very broad geographical areas. One or more Field Plant Technologists represent the plant technologies in a designated portion of each area.

The panel recognized the need for coordination of Plant Materials work within and among groups of States. Some effective devices are in regular use within a group of States, efforts have been made to provide coordination between adjacent groups of States, and the National Plant Materials Center renders several services of an "intergroup" nature.

The panel recognized the desirability of formalizing the regular exchange of information and of plant materials among all groups of States, but this seems impossible because of the stringent shortage of PMTs and lack of time on the part of the Head Plant Materials Technician. Since 1953 some of the activities for interchange of plant materials and results on a nationwide basis have been assumed by other agencies, and some of the Plant Materials Centers of the Service have cooperated in this effort. However, the primary interests of the Service are only incidental to the objectives of the agency centralizing the exchange.

Some devices for making promising materials and cultural management methods available to other Field PMTs and PMCs within a group of States are: (1) annual conferences of PMTs and, where possible, Managers of PMCs at a Center and in the area served by a Field PMT (such conferences are rotated among Centers and PMT areas);



(2) circulation of annual technical reports of results obtained at FMCs and from Field Plantings; (3) exchange of propagules of promising plant materials among FMCs at the initial increase stage; and (4) arrangements for exchange by the W-F PMT. In addition, cooperative arrangements with other agencies in some groups of States have extended testing of all kinds to problem sites not served by FMCs, FEPs and FPs.

Plausible suggestions for exchanging materials and results between groups of States are: (1) interarea conferences of W-F PMTs and/or F-PMTs that are appropriately timed, (2) combined PM workshops across area lines, (3) national PM workshops at which major emphasis is given to technical subject matter, and (4) providing promising accessions at the initial increase stage to ARS for use in the system of uniform (nationwide) tests.

A real need and opportunity exists for increasing and getting into production materials that are promising in one group of States but for which production could better be done in another group of States. Plant Materials Memorandum SCS-1 provides the means for this kind of coordination.

A major proposal was made for centralizing the exchange of technical information obtained from all phases of Plant Materials work in the Service. The complete proposal, with some of the discussion, is given for purposes of record.

Exchange of technical information on results obtained at Plant Materials Centers, from Field Evaluation Plantings, and from Field (size) Plantings.

1. WHAT - kinds of information:

- a. Comparative performance of all accessions, using duplicate copies of SCS-587.
- b. Results of comparisons from cultural and management studies, using narrative reports.
- c. Lists of Field (Size) Plantings and of Field Evaluation Plantings showing purpose, location, and procedures, using copies of annual work plans or projects.

2. WHEN - timing exchange of information:

- a. Performance of accessions, annually.
- b. Results from cultural and management studies, annually.



- c. Field (Size) Plantings and Field Evaluation  
Plantings lists, annual work plans or copies  
of projects when initiated.

Discussion centered around ways and means of reducing the volume of material and the work required to submit material for items 1 and 2. Alternatives to submitting all information annually were: (1) performance of accessions only for those in initial increase, and (2) reports from cultural and management studies only when information had reached the processing stage.

- 3. BY WHOM - assembling, processing, and distributing information:
  - a. Assembling by National Plant Materials Center.
  - b. Processing by Manager of National Plant Materials Center or preprocessing for a group of States by W-F PMT before submitting to National Plant Materials Center.
  - c. Distribution by National Plant Materials Center either direct to Field Plant Materials Technicians or through W-F PMT.

#### RECOMMENDATIONS:

- 1. The advantages of exchange of information on Plant Materials between PMTs within and among groups of States is patent. Proved means for facilitating exchange should continue to be used, particularly conferences of PMTs within and among groups of States, visits from the National PMT, and National Plant Materials workshops, during which technical matters are a major part of the agenda.
- 2. The desirability for centralizing and effectively distributing information and materials among PMTs in the five groups of States in the Service is recognized. The detail of the methods proposed to achieve these aims and the frequency of submitting information and reports require further study. It is recommended that the Head Plant Materials Technician arrange for trial of some of the proposals and that this subject be re-scheduled for discussion at the next Plant Materials workshop.
- 3. The Head Plant Materials Technician, working with the WF-PMTs, should arrange for trials aimed toward production of accessions of proved conservation plant materials in one group of States by seed producing areas in another group of States.

THE PROGRAM OF THE NATIONAL PLANT MATERIALS CENTER  
Beltsville, Maryland

A. Direct services to Plant Materials Centers and Plant Materials Technicians:

1. Acquire plant materials from world-wide sources with known or unknown conservation potential.
2. Grow new accessions to produce seed or stock, securing basic data on habits.
3. Distribute seed for vegetative materials, with basic data, to Plant Materials Centers where the climate approximates the native habitat.
4. Prepare herbaria specimens for identification of unknown accessions grown here, also identification of seeds and plants for Plant Materials Technicians.
5. Ascertain botanical name changes and synonyms and notify those concerned.
6. Maintain bulk seed and plant source reference files.
7. Secure and ship non-commercial inoculants for little-known legumes, to Plant Materials Centers and Plant Materials Technicians.
8. Operate as a clearing house for all Soil Conservation Service seed exchange with foreign countries.
9. Supply bulk seed of accessions not available elsewhere, such as: (Elaeagnus umbellata, Natob and japonica intermedia Lespedeza).
10. Purchase seed of specific items requested by or through Washington-Field Plant Materials Technicians.
11. Limited production of stock for adjacent States. (Salix purpurea stricta, Lonicera maackii, Tripsacum dactyloides, Panicum amarum, P. amarulum, Ketan Kudzu, Zoysia Z-73 sod).

B. Indirect services to Plant Materials Centers and Plant Materials Technicians:

1. Catalogue seed cleaning techniques.

2. Run germination tests as a step toward maintaining viable seed of old accessions.
3. Regrow or have regrown accessions of low viability.
4. Maintain picture files of nearly all accessions grown. (Black and white or color).

C. Relations:

1. Maintain a living herbarium of conservation plants for plantsmen and tourists.
2. Conduct tours, explaining the plant materials and SCS program to individuals and groups (domestic and foreign).
3. Other agencies:  
  
ARS Specialists (New Crops Res. Div.; Forage; Turf;  
Plant Pathology)  
U. S. Forest Service - Research at A. R. C.  
Fish and Wildlife - Research at A. R. C.  
Soil and Water Conservation - Research at A. R. C.
4. Periodic visitations and review of work at Plant Materials Centers and field operations.

D. Observational projects to meet requests and needs:

1. Early maturing legume with persistent fruit, suitable for wildlife habitat improvement, north of present usage area.
2. Ground covers for rurban erosion control.
3. Plant materials for riverbank and shore erosion control (brackish and saline sites) -- assembly and production techniques.
4. Roadbank and gully control.
5. Winter annual bromes--comparisons with Bromus arvensis--seed, cover, tops and roots.
6. Assembly and selection of Switchgrass accessions for (a) wildlife habitat, (b) gully stabilization, (c) forage.
7. Cultural methods for production of shelterbelt plants--for improved field survival.

8. Big trefoil adaptability tests--soils.
9. Produce all stock for SCS-FS Black locust clonal test plantings--resistance to borer damage.
10. Maintain mother stock blocks of some accessions.

TOUR OF THE AGRICULTURAL RESEARCH CENTER  
Beltsville, Maryland

The group left the National Plant Materials Center by bus at 8:15 A. M. for a tour of the Plant Industry Station, where our host was Dr. E. A. Hollowell, assisted by Dr. Chas. W. Alexander.

Grass and turf plots were shown by Dr. Alexander, after introductory remarks by Hugo Graumann.

Paul Henson illustrated the seriousness of disease in legumes with a field nursery of birdsfoot trefoils. One cross, bred for resistance, shows promise.

The creeping alfalfas generally are poor spreaders in this country. Hugo Graumann cited "Rambler" as the exception. It suckers from the roots.

Clover plots were next visited, shown by Dr. Hollowell. A strain of yellow sweetclover, with seeds thrice the size of crimson, may allow deeper planting in the plains where desiccation may prevent germination.

In the greenhouses, Dr. Kermit Kreitlow showed a little of his work with viruses on legumes and indicator plants. Discouraging, when only two ladino plants out of 3000 appear to be resistant, and they too go down under subsequent testing.

Dr. Warren Shaw and Dr. Leonard Jansen, in herbicide research, have, among other problems, a 35-million-acre one of weed control in cereals seeded with legumes. 424DB is one of their latest answers. Their talks were well illustrated with living test plants, photographs, and organic structural formulae.

As good a living demonstration as you will ever see on the effects of photoperiodism was given by Dr. Robt. J. Downs. A cocklebur may be thrown into flowering by a single day of light treatment on a single leaf. A pine under long days has 100 times the growth of its short-day counterpart.



After lunch at the Log Cabin, the group visited the Plant Introduction Gardens at Glenn Dale and was received by Dr. Wm. E. Whitehouse and Mr. Eugene Griffith.

Dr. Whitehouse outlined the position and functions of the Station, which receives and processes some 20,000 accessions yearly.

Mr. Wm. H. Preston showed the advantages of sphagnum moss for seedling propagation, and the mist propagation of cuttings. The seed storage vaults were next visited with Dr. Griffith. They are kept at 33°, relative humidity 35%, and hold 10,000 accessions.

The quarantine part of the work was explained by Dr. Robt. T. Kahn. The detection of viruses is particularly difficult, involving grafting, inarching, and the use of indicator plants.

From the greenhouses the group moved for a short look at the area in front of the office, dominated by the large sawtooth oak.

Last reviewed with Dr. Griffith were the bamboos. Of particular interest was Sasa pygmaea, escaped to form an extensive area of lawn and withstanding two-inch mowing well.

After re-assembling at the Plant Materials Center, Dr. A. D. Stoesz gave a short summary and conclusion to the workshop.

What daylight was left was spent in the legume and grass rod row plantings on the Center.

